

(12) UK Patent Application (19) GB 2 294 249 A

(43) Date of A Publication 24.04.1996

(21) Application No 9521399.7

(22) Date of Filing 17.10.1995

(30) Priority Data

(31) 9421000 (32) 18.10.1994 (33) GB
9421943 01.11.1994

(51) INT CL⁶
B60G 25/00

(52) UK CL (Edition O)
B7J J101G

(56) Documents Cited

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WO 94/04397 A1 WO 88/04248 A1

(71) Applicant(s)

Clive Scott
1 Sherwood Road, GRIMSBY, S Humberside,
DN34 5TG, United Kingdom

(58) Field of Search
UK CL (Edition N) B7J
INT CL⁶ B60R 25/00
Online database: EDOC

(72) Inventor(s)
Clive Scott

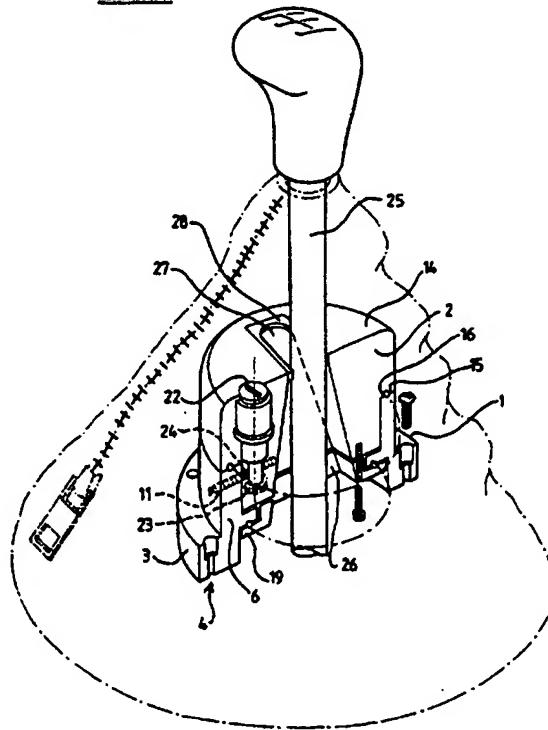
(74) Agent and/or Address for Service

Forrester Ketley & Co
Forrester House, 52 Bounds Green Road, LONDON,
N11 2EY, United Kingdom

(54) A theft deterrent device

(57) A theft deterrent device for use in a motor vehicle is used to lock the gear stick 25 in position. The device includes an outer housing 1 which can be secured to the motor vehicle. An element 2 is provided which is mounted on or in the housing and which can move relative to the housing. The element defines a passage or slot 27 through which the gear stick 25 of the motor vehicle may pass. A lock 22 is provided to lock the movable element in position thus preventing movement of the gear stick.

FIG 2



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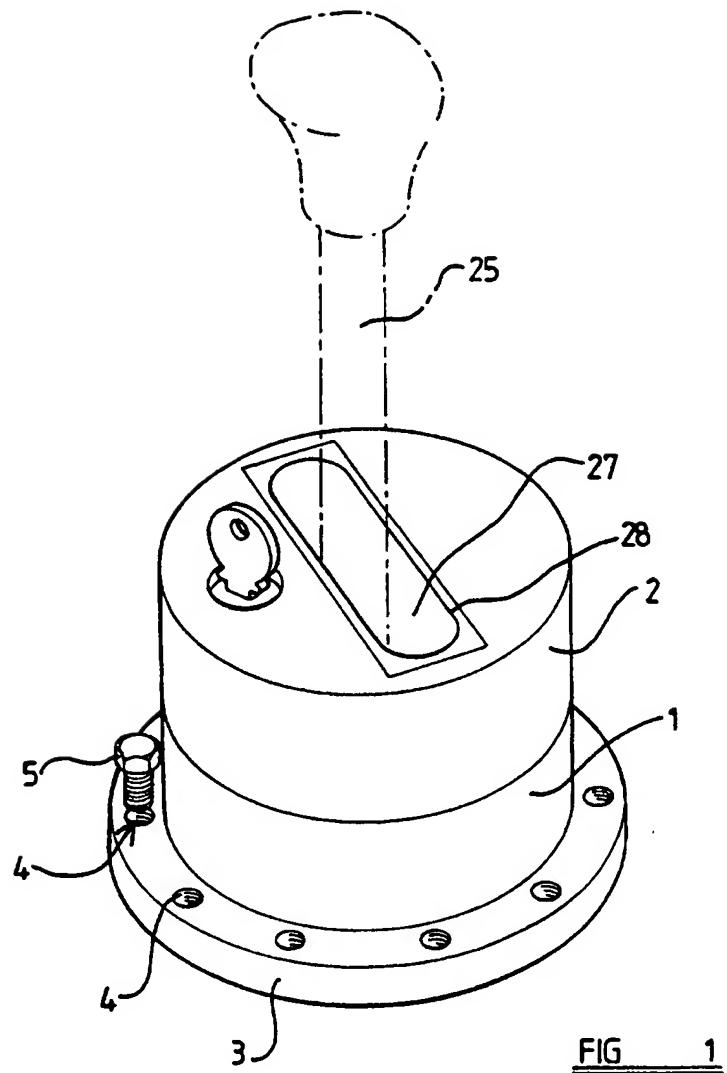
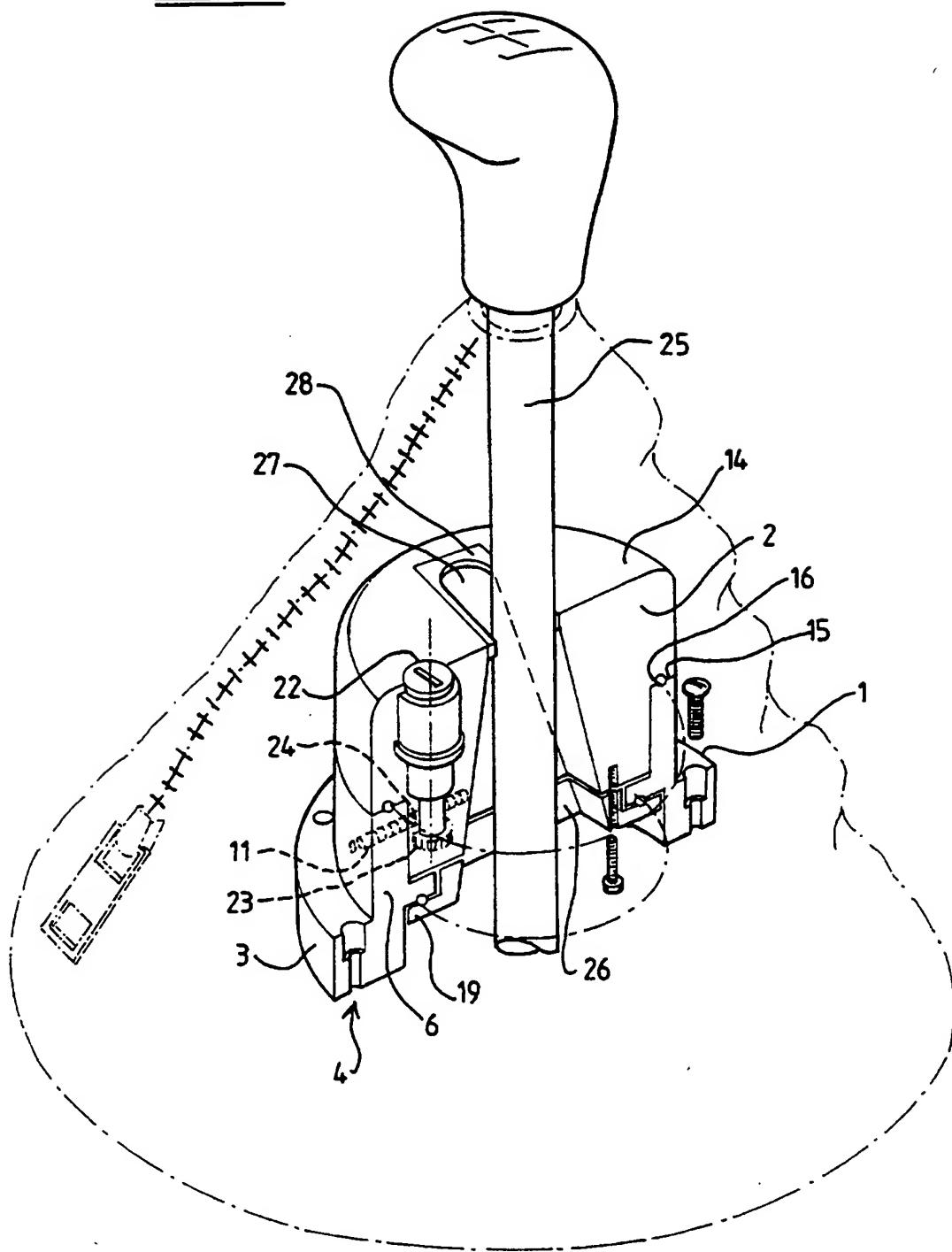


FIG 2



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FIG 3

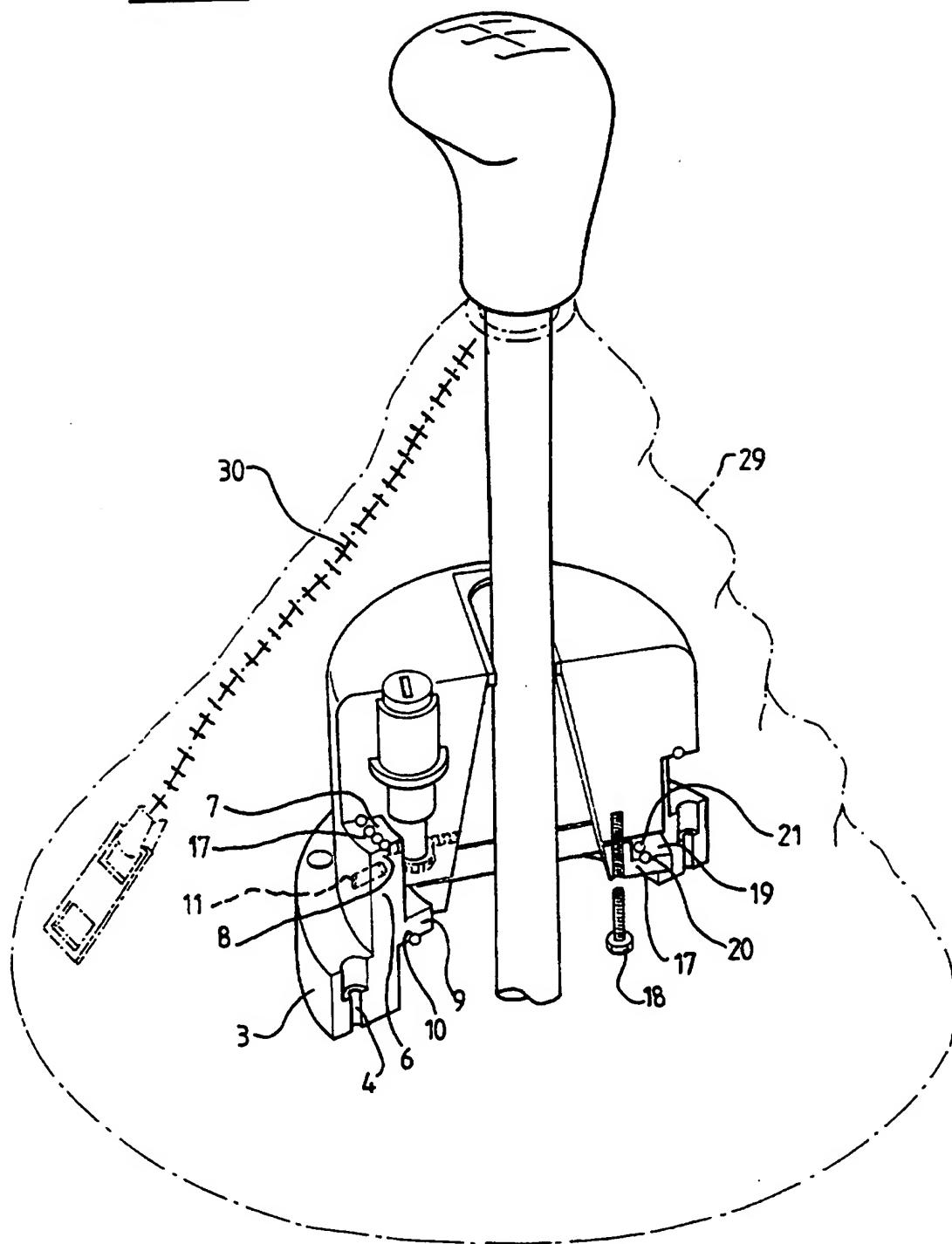
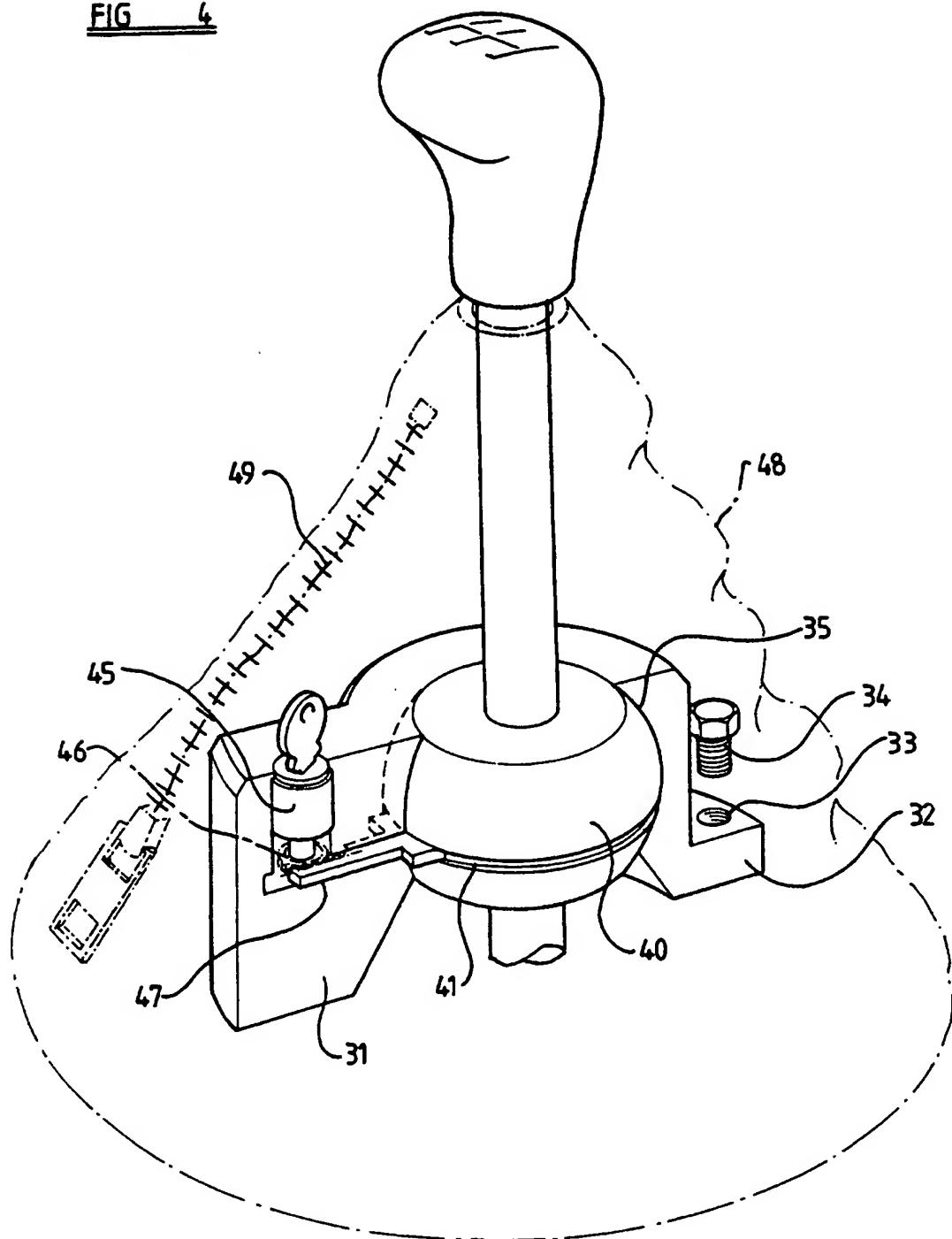


FIG 4

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FIG 6

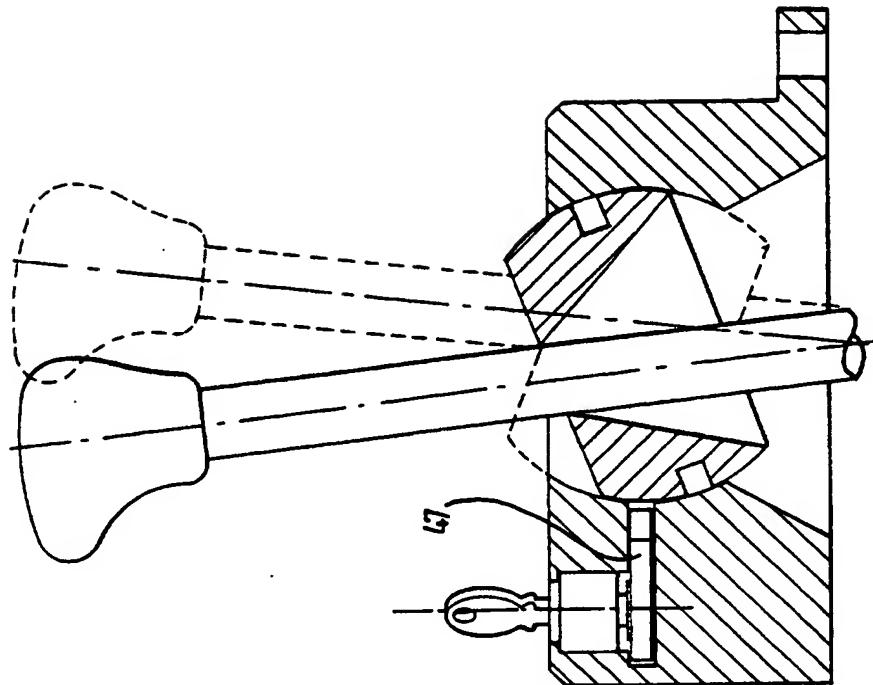
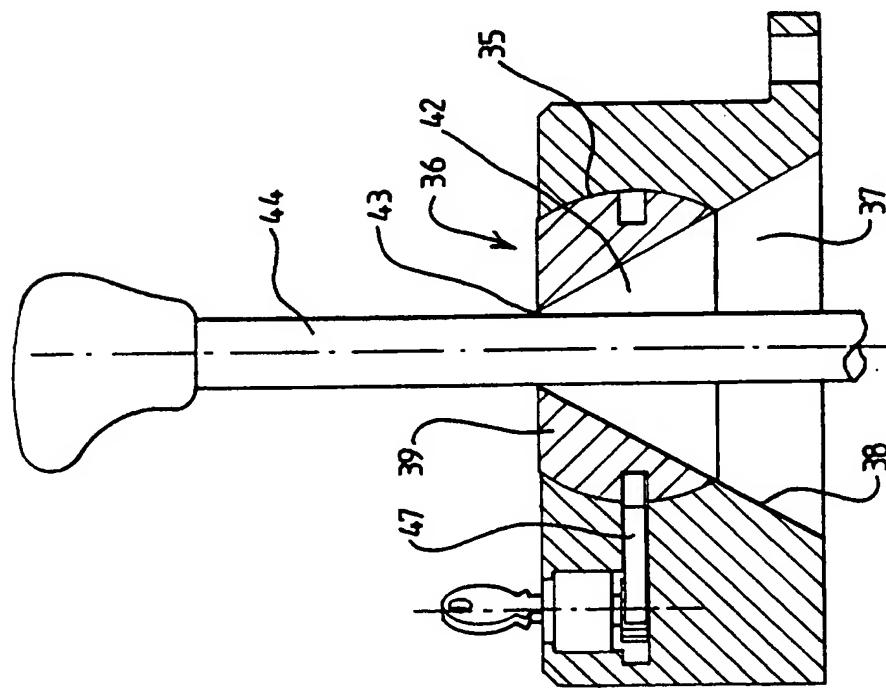


FIG 5



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DESCRIPTION OF INVENTION

"IMPROVEMENTS IN OR RELATING TO A THEFT DETERRENT DEVICE"

THE PRESENT INVENTION relates to a theft deterrent device, and in particular relates to a theft deterrent device intended for use with a motor vehicle.

The present invention seeks to provide a theft deterrent device adapted to deter thieves from stealing motor vehicles.

There is a need for an effective theft deterrent device which will deter thieves from stealing motor vehicles, and it is an object of the present invention to provide such a device.

According to this invention there is provided a theft deterrent device for use in a motor vehicle, the device comprising a housing, means to secure the housing to a motor vehicle, an element mounted on or in the housing for movement relative to the housing, the element defining a passage through which the gear stick of the motor vehicle may pass, locking means being provided adapted to lock the movable element, to prevent substantial movement of the movable element and thus to prevent substantial movement of the gear stick.

Preferably the lock is a key operated lock adapted to drive a locking element between a locking position and a release position.

Conveniently the lock is carried by the said element.

In an alternative embodiment the lock is carried by the said housing.

Conveniently the housing is provided with a flange, the flange defining a plurality of apertures therethrough, the apertures being adapted to receive bolts to secure the housing to the motor vehicle.

Preferably the bolts comprise shear headed bolts.

Advantageously the housing is substantially cylindrical, and defines oppositely directed faces adapted to engage ball races, the said element defining opposite inwardly directed faces located adjacent said faces on the housing and trapping therebetween ball races or the like, the element thus being rotatable about the axis of the housing.

Conveniently the element is formed of two components, the components being secured together.

Advantageously the two components are secured together by means of shear headed bolts.

Advantageously the through-passage is defined at one end by a slot having a predetermined axis and a width slightly in excess of the width of a gear stick, and at the other end by means of a slot, having an axis perpendicular to the axis of the first slot and having a width slightly greater than the width of a gear stick.

Preferably the lock is mounted on the rotatable member, the lock being adapted to drive a locking bolt from a retracted position in which the rotatable member is free to rotate in an extended position in which the bolt is partly received within a bore formed in the said wall, thus preventing rotation of the rotatable member.

In an alternative embodiment the housing defines a part spherical recess, said element, having a part spherical exterior surface, being received within the part spherical recess for rotation therein.

Preferably the lock is received within the housing, adapted to drive a locking bolt from a retracted position to a position in which the locking bolt extends at least partly into the part spherical recess, the element being provided with a groove adapted to receive part of the locking element.

In order that the invention may be more readily understood, and so that further features thereof may be appreciated, the invention will now be described, by way of example, with reference to the accompanying drawings in which

FIGURE 1 is a perspective view of a first embodiment of the invention, with a gear stick of a motor vehicle shown in phantom,

FIGURE 2 is a partly cut away view of the embodiment of Figure 1 when mounted in position,

FIGURE 3 is a view corresponding to Figure 2 showing the apparatus in an alternative condition,

FIGURE 4 is a view corresponding to Figures 2 and 3, but illustrating an alternative embodiment of the invention,

FIGURE 5 is a sectional view through the embodiment of Figure 4, and

FIGURE 6 is a further sectional view through the embodiment of Figure 4 illustrating the operation of the embodiment.

As will become clearer from the following detailed description, a theft deterrent device intended for use in a motor vehicle comprises a housing which is adapted to be permanently secured to the motor vehicle. Mounted on the housing is an element embracing the gear stick of the motor vehicle. The element is adapted to move relative to the housing thus enabling the gear stick to be utilised. A locking mechanism is provided adapted to lock the element relative to the housing in one predetermined position. When the arrangement is in the locked condition the gear stick cannot be used to change gear.

Referring initially to Figures 1 to 3 of the accompanying drawings, a vehicle theft deterrent device is illustrated which comprises a housing 1 adapted to be secured to the body of a motor vehicle and an element 2 which is mounted for rotation relative to the housing 1.

The housing 1 is of substantially hollow cylindrical form, and is provided with a radially outwardly extending flange 3. The flange 3 is provided with a plurality of axially extending bores therethrough, each adapted to receive a bolt such as a shear bolt 5. When a shear bolt is utilised, as the bolt is tightened, a

substantial part of the head of the bolt snaps off with the consequence that the bolt cannot readily be removed.

The flange 3 is mounted on the exterior of a wall 6 which forms the exterior of the cylindrical housing. The wall 6 is provided, at its upper edge 7 with a groove 8 which receives a ball race. The wall 6 carries an inwardly directed flange 9 which carries, on its under-surface, a groove 10 which also receives a ball race. A radial bore 11 is provided in the wall 6 having an open end on the interior of the wall 6 to receive a lock bolt as will be described hereinafter in greater detail.

The element 2, which is rotatably mounted on the housing 1 is formed of two principal components.

The upper component 14 is of substantially cylindrical form, having an upper region with an outer diameter substantially equal to the outer diameter of the wall 6. The lower region of the upper component 14 is stepped inwardly to be received within the cylindrical inner space within the housing 1 defined by the upper part of the wall 6. A downwardly facing step surface 15 is thus defined between the upper and lower regions which has formed therein a groove 16 which engages a ball race 17 located between the step surface 15 and the upper surface 7 of the wall 6. The lower end of the element 14 is located above the inwardly directed flange 9.

Secured to the lower surface of the upper component 14 is a lower component 17. The lower component 17 is secured to the upper component 14 by means of a plurality of bolts 18. The bolts may have shear heads. The lower component 17 has a portion which is received within the circular opening defined by the

inwardly directed flange 9 and, at a lower location, a radially outwardly directed flange 19 which is thus located immediately beneath the flange 9. The flange 19 defines, in its upper surface, a groove 20 which receives a ball race 21. The ball race 21 is also received within the groove 10 provided in the upper surface of the flange 9.

It will thus be understood that the element 2, formed of the components 14 and 17 is securely connected to the housing, but is rotatable relative to the housing.

The component 14 is provided with a key operated lock 22 which is adapted to drive a pinion 23, the pinion engaging a locking bolt 24 that is capable of axial movement. In an initial condition of the apparatus, as illustrated in Figure 2, the element 2 is located such that the bolt 24 is aligned with and has been driven partly into the bore 11 provided in the wall 6. Consequently, the element 2 cannot rotate relative to the housing. However, the key operated lock 22 may be actuated to drive the bolt 24 radially inwardly, withdrawing the bolt from the bore 11, thus permitting the element 2 to rotate, for example, to the position shown in Figure 3.

The components 14 and 17 define a through-passage which receives a gear stick 25, of a motor vehicle. The part of the through-passage defined by the lower element 17 comprises an elongate slot 26. The width of the slot 26 is selected to be slightly greater than the diameter of the gear stick 25.

The upper end of the passage is an elongate slot 27 defined in the upper surface of the upper element 14. The slot 27 again has a width which is slightly greater than the width of the gear stick 25. The slot 27, however, has

an axis which extends perpendicularly to the axis of the slot 26. The periphery of the slot 27 may be provided with a guide element 28 formed of a plastic material, for example, to minimise rattling.

It is to be appreciated that when the theft deterrent device is in the condition illustrated in Figure 2, the gear stick 25 is constrained by the slot 26 and by the transversely extending slot 27, meaning that the gear stick cannot be moved from the illustrated position. However, when the lock 22 has been actuated to retract the locking bolt 24, to permit free rotation of the element 2, then the gear stick can be moved to any desired position.

If desired, the anti-theft device may be concealed beneath a gaiter such as the gaiter 29. A zip fastener 30 is provided which is associated with the gaiter to provide ready access to the lock 22.

Figures 4 to 6 illustrate an alternative embodiment of the invention. In the embodiment illustrated in Figures 4 to 6, a housing 31 is provided, at least part of the periphery of the housing 31 being provided with a radially extending flange 32, the flange 32 having bores 33 therethrough adapted to receive bolts such as a shear bolt 34 to enable the housing to be securely connected to a motor vehicle.

The housing may be of any appropriate form, but part of the housing defines a part spherical recess 35, the part spherical recess 35 having an upper opening 36, and also having a lower opening 37. The lower opening may communicate with a diverging passage 38 formed within the housing 31.

A rotatable element 39 is received within the part spherical recess 35, the rotatable element 39 having a part spherical exterior surface 40. An equatorial groove 41 is present in the part spherical exterior surface 40.

A through-passage 42 is defined passing through the element 39, the through-passage 42 having a substantially circular upper end 43, the circular upper end having a diameter slightly greater than the diameter of a gear stick 44 in connection with which the device is to be used. The passage 42 diverges from the upper end 43 in a substantially conical manner and, in one position of the rotatable element 39, as illustrated in Figure 5, the diverging through-passage 42 is substantially aligned with the diverging passage 38 in the housing 31.

Part of the housing 31 contains a key operated lock 45. The lock is adapted to drive a pinion 46 which, in turn, drives a locking bolt 47 from a retracted position to a locking position. Figures 4 and 5 show the locking bolt 47 in the locking position. It can be seen that when the locking bolt 47 is in the locking position, part of the locking element has been driven into engagement with the equatorial groove 41 formed in the part spherical outer surface 40 of the rotatable element 39, thus locking the rotatable element 39 in position. When the locking bolt 47 has been retracted, as shown in Figure 6, the locking bolt 47 is withdrawn from the equatorial groove 41 and, indeed, is withdrawn totally from the part spherical recess, thus permitting the element 39 to rotate freely.

It is to be appreciated that the embodiment illustrated in Figures 4 to 6 will operate in a manner similar to that described above with reference to the embodiment of Figures 1 to 3. The housing 31 will be

securely connected to a motor vehicle using the shear headed bolts 34, with the gear stick 44 of the motor vehicle passing through the rotatable element 39. Again, a gaiter 48 may be provided, with an associated zip 49, to conceal the arrangement.

When the locking bolt 47 is in the locking position, as illustrated in Figures 4 and 5, the rotatable element 39 cannot rotate, meaning that is impossible to change gear in the motor vehicle whereas, when the locking element 47 is in the retracted position, as illustrated in Figure 6, the rotatable element can rotate, thus enabling the gear stick to be moved. Consequently, the motor vehicle may be utilised in the usual way.

It is to be understood that the housing may be made of any suitable material, but it is preferred to utilise a strong material, which is resistant to drilling or sawing. Similarly, the other components of the theft deterrent device may be made of a suitable strong material.

Whilst the invention has been described with reference to two specific embodiments of the invention, it is to be appreciated that many modifications may be effected without departing from the scope of the invention as defined in the following Claims.

CLAIMS:

1. A theft deterrent device for use in a motor vehicle, the device comprising a housing, means to secure the housing to a motor vehicle, an element mounted on or in the housing for movement relative to the housing, the element defining a passage through which the gear stick of the motor vehicle may pass, locking means being provided adapted to lock the movable element, to prevent substantial movement of the movable element and thus to prevent substantial movement of the gear stick.
2. A device according to Claim 1, wherein the lock is a key operated lock adapted to drive a locking element between a locking position and a release position.
3. A device according to Claim 2 wherein the lock is carried by the said element.
4. A locking arrangement according to Claim 2 wherein the lock is carried by the said housing.
5. A device according to any one of the preceding Claims wherein the housing is provided with a flange, the flange defining a plurality of apertures therethrough, the apertures being adapted to receive bolts to secure the housing to the motor vehicle.
6. A device according to Claim 5 wherein the bolts comprise shear headed bolts.
7. A device according to any one of the preceding Claims wherein the housing is substantially cylindrical,

and defines oppositely directed faces adapted to engage ball races, the said element defining opposite inwardly directed faces located adjacent said faces on the housing, and trapping therebetween ball races or the like, the element thus being rotatable about the axis of the housing.

8. A device according to Claim 7 wherein the element is formed of two components, the components being secured together.

9. A device according to Claim 8 wherein the two components are secured together by means of shear headed bolts.

10. A device according to any one of Claims 7 to 9 wherein the through-passage is defined at one end by a slot having a predetermined axis and a width slightly in excess of the width of a gear stick, and at the other end by means of a slot, having an axis perpendicular to the axis of the first slot and having a width slightly greater than the width of a gear stick.

11. A device according to any one of Claims 7 to 10 wherein the lock is mounted on the rotatable member, the lock being adapted to drive a locking bolt from a retracted position in which the rotatable member is free to rotate in an extended position in which the bolt is partly received within a bore formed in the said wall, thus preventing rotation of the rotatable member.

12. A device according to any one of Claims 1 to 6 wherein the housing defines a part spherical recess, said element, having a part spherical exterior surface, being received within the part spherical recess for rotation therein.

13. A device according to Claim 12 wherein the lock is received within the housing, adapted to drive a locking bolt from a retracted position to a position in which the locking bolt extends at least partly into the part spherical recess, the element being provided with a groove adapted to receive part of the locking element.
14. A theft deterrent device substantially as herein described with reference to and as shown in Figures 1 to 3 of the accompanying drawings.
15. A theft deterrent device substantially as herein described with reference to and as shown in Figures 4 to 6 of the accompanying drawings.
16. Any novel feature or combination of features disclosed herein.



The
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Office
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Application No: GB 9521399.7
Claims searched: 1 to 15

Examiner: Colin Thompson
Date of search: 21 December 1995

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.N): B7J

Int Cl (Ed.6): B60R 25/00

Other: Online database: EDOC

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB 2275034 A	(Chao Sheng Chang) See especially Figures 1 & 5	1,5,6
X	GB 2152454 A	(Wilson)	1,2,4,5
X,P	EP 0641692 A1	(M M T di Padrin Mario & C)	1,2,4,5
X	WO 94/04397 A1	(Kibble) See especially Figures 4 to 15	1,2,4,5
X	WO 88/04246 A1	(Gilfoyle)	1,2,4,5

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.